Lossy Raid Storage Architecture for JPEG 2000 Images

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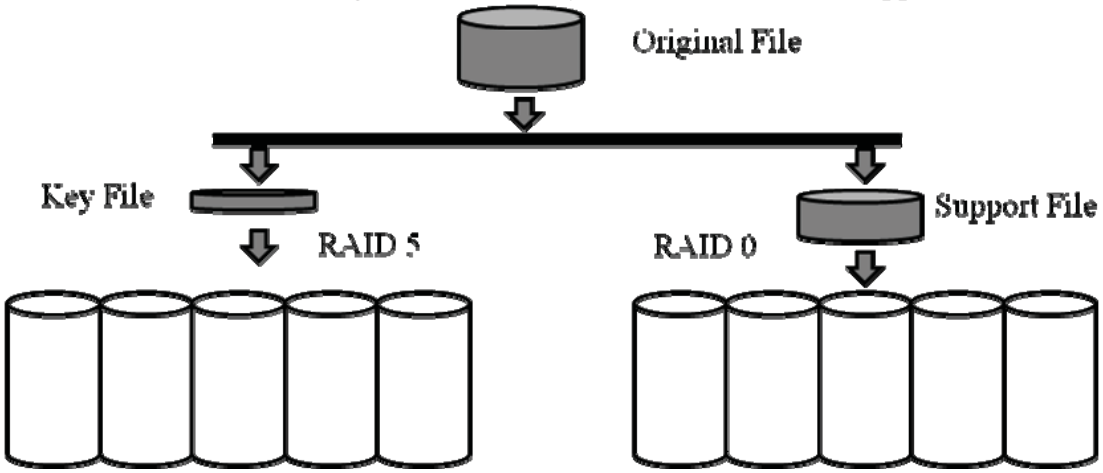
Professional processes for creation and manipulation audiovisual content, require a great volume of information which must be lightly compressed for its processing and accessible by a huge number of users. In spite of this compression, the resulting files are usually of a considerable size and they require a special treatment. The method proposed for storage of JPEG2000 images consists in dividing the file into two parts, “key” and “support” files, reliable and unreliable storage respectively. The key file will contain at least the different boxes of the contiguous Code-Stream box with its contents and the headers of each one of the contiguous Code-Stream box together with the image material which can be stored depending on transfer speed so that reading of both systems will occur on a parallel. The rest of the data will be stored in the support file.

Key file is stored in RAID5 which provides reliability as well as increasing transfer, and the support file, considered to be secondary, is stored on RAID0, since what is pursued above all is transfer speed. In order to have more security, other sets of RAIDs can be use (e.g. RAID1 for key file and RAID5 for support file).



With Seagate Barracuda, a normal configuration in RAID5 for 180 TB has to use 150 of 2TB disks; with our configuration we use only 93 disks.

In this work, an economical method for storage of multimedia professional content applied to JPEG2000 files has been formulated. This method uses two types of RAID configuration to achieve safety in the data which most affect quality and transfer speed in the rest. This method opens a wide range of future work:

-A new configuration way for architectures for low demand video servers.

-Definition of ideal size for each file.

-Investigation of areas which are really necessary in each one of the headers to reduce as much as possible the file to be stored as main.

-Implementation of an HW model which speeds up separation and union of files.

-Application of the method to other types of files and code systems.

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